

November 30, 2013

TO: James L. Cox, Jr.
Brent Coon & Associates
3801 E. Florida Ave., Suite 905
Denver, CO 80210-2500

From: Douglas J. Casa, PhD, ATC, FACSM, FNATA
Chief Operating Officer, Korey Stringer Institute
Professor, University of Connecticut

Re: Jared Whitt/Expert Opinion

Please let this document serve as my preliminary opinion for the legal case noted above.
I have based this opinion on the following documents that I have received:

- A) Union Pacific Railroad Track Laborer/System gang job description
- B) Records from Heartland Medicine, 3/28/13, Dr. Bauer
- C) Dr. Bauer notes- 7/17/12
- D) Radiology report- 8/7/12- Dr. Pottenger
- E) Heartland Health Radiology MRI
- F) St. Luke's Neurological Consultants- 8/14/12, Dr. Bollineri
- G) Dr. Lukens notes- 9/10/12
- H) Aaron Jones, DPT notes- 12/28/12
- I) Dr. Brushwood notes- 7/17/12
- J) Jake DeNell, PT- FCT report- 7/27/13
- K) Union Pacific Quality Safety Meeting Process/Heat stress Prevention- April 2011 (Course code-QS97)
- L) Heat stress prevention program training fro employees, 2010 (UPRR Training Code: PXBD)
- M) Depositions- Whitt, Birt, Linford, Ornellas, Steely, Wiesen, Dalebout, Grogan
- N) Report of Richard J. Sanders, MD- Narrative Report and Independent Medical Evaluation on Jared Whitt.
- O) Defendant's responses to plaintiff's third request for production of documents (September 6, 2013)
- P) Federal Railroad Administration- 49 C.F.R. 225.33 Internal Control Plans.
- Q) Federal Railroad Safety Act 49 U.S.C. 20109. Employee Protections.
- R) GCOR- General code of operating rules, fifth edition, 2005.
- S) Union Pacific Maintenance-of-Ways Rules Effective Nov. 17, 2008
- T) Medical records from Larry Dickinson, Elmhurst Memorial Hospital, Grower Family Care Center, Performance Plus, & St. Luke's Northland

Additionally, the opinion is garnered from my extensive experience studying this topic, various research articles written by myself and others, and previous experience as an expert witness. Lastly, future discoveries in this case may influence my opinion.

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Consideration #1

Jared Whitt suffered a serious heat illness on June 28, 2012. On this day he was an employee of Union Pacific Railroad performing the duties of an anchor applicator machine operator. The heat illness has been diagnosed, by multiple physicians, to be exertional heat stroke. He has lingering neural pathology associated with left overhead repetitive exercise. The contracture he experienced with his left limb at the time of the incident on June 28, 2012 likely played a role in his current problem and likely exacerbated an earlier work incident. His limitations associated with his left arm are extremely well outlined in the FCE report submitted by Mr. DeNell (Physical therapist). One of the critical contributing factors to his medical complications was a lack of proper health/safety diligence (regarding the prevention, recognition, and treatment of his condition). Additionally, many factors in this case show the intense thermoregulatory demands placed on this occupation were not appreciated and the health/safety policies in place in June 2012 to protect the employee's health were grossly inadequate.

Consideration #2

Many factors have been purported to be causative with regards to reducing exercise heat tolerance and potentially increasing the risk of heat related illnesses (including heat exhaustion, heat stroke). The top reasons that would have a role in the magnitude of stress during exercise in the heat are as follows:

-Intensity of work/exercise: A key factor in influencing the rate of rise in core temperature. Body temperature is highly correlated with intensity of exercise. The intensity of the exercise session is influenced by the environmental conditions in which the employee must perform his work duties (i.e. heat produced by track, machinery, lack of air flow, etc.).

-Environmental Conditions: Often measured using the WBGT, this is a combination of temperature, humidity, and influence of the sun (radiation). The moisture in the air (humidity) plays the greatest role in the impact of the environmental conditions. The environmental factors on the days in question are obviously important, but the heat load the preceding days (especially if intense effort took place in it) are also important. The microenvironment in which the employee is actually working is key, not just meteorological station reports.

-Work-to-Rest Ratios: The work-to-rest ratio must be implemented based on the environmental conditions and intensity of the exercise that is being performed. Obviously, the higher of either dictates more rest and less work. When both are demanding (work tasks and environmental conditions) then extreme caution must be utilized.

-Heat Acclimatization Status: Heat Acclimatization- A physiological process that occurs (largely) in the first 7-10 days of exposure in which the increased tolerance to hot conditions have such a great influence on decreasing the negative responses associated with exercise in the heat. Extremely important physiological changes happen in just the first 3-4 days of exercise heat exposure.

-Clothing/Equipment: Anything (e.g. equipment) that increases the weight that a person must carry or blocks the routes in which the skin can have access with the environment will impede the thermoregulatory response.

-Fitness Level: An individual with a high fitness level will not have to work at such a high percentage of max compared to a person who is less fit, thus influencing the relative intensity of the activity (the key factor, noted above, influencing the rate of rise in core temperature).

-Body Fatness: Often correlated with fitness level.

-Hydration Status: When intensity is controlled, body temperature is closely correlated with hydration status (in both field and laboratory studies). This would mean a person who has a 4% decrease in body weight as a result of dehydration would have about a 1°F higher body temperature than someone who has a 2% decrease in body weight.

-Individual Issues (medical condition, medications, etc.): A person who is sick (temporary febrile condition) at the time of intense exercise in the heat, and/or taking certain medications, and/or has inherent intolerance to heat due to medical conditions, etc may have an increased likelihood of suffering an exertional heat illness.

-Sleep/Fatigue Status: The evidence shows that someone with accumulated fatigue, whether from work/exercise and/or lack of quality sleep, may have reduced exercise heat tolerance.

Consideration #3

A look at this case reveals many factors noted above to be present on June 2012.

- 1) Intense effort/exercise
- 2) Extremely stressful environmental conditions:
 - a. temperature reached 101°F and humidity around 50-55% (extreme danger based on NOAA's National Weather Service guidelines.
 - b. microenvironment around operation much hotter for steel gang.
- 3) Work-to-rest ratios. It does not seem that efforts were made to modify the work-to-rest ratios based on the environmental conditions and the work being performed.
- 4) Clothing/Equipment use- clothing to protect steel gang employee during work also increases heat produced and diminishes heat dissipation
- 5) Dehydrated- even though he attempted to hydrate, it would have been nearly impossible to keep up with fluid losses while performing intense labor in these environmental conditions.

Consideration #4

Given that most of the factors noted in Consideration #3 were entirely possible for all steel gang workers who work during the summer months in this region of the country, it would have been highly beneficial to have a much better heat illness program in place. The heat illness protection policy that was in place at the time of the incident in question needs to be examined in-depth so the flaws can be noted (examples provided below-this is not an exhaustive review of flaws in policy and procedures):

A) Heat Stress Prevention Program Training For Employees (UPRR Training Code: PXBD-2010)

1. Page 24: "Employee recognizes the importance of notifying a supervisor when they or a co-worker show signs or symptoms of heat stress."

Note: This point has two considerations. First, a person suffering a heat stroke has mental compromise, so they can not properly self-assess. Thus, they often can not notify a supervisor or co-worker. Additionally, about 50% of heat stroke victims do not have prodromal signs and symptoms which means the first indication of a problem will be the collapse. Second, in this case no one was present to assist Jared when he experienced problems, thus losing critical time in the process of implementing appropriate care.

2. Page 27: Heat stress recognition and prevention training factors leading to heat stress.

Note: Two key factors are not included. The intensity of the exercise session and inappropriate work-to-rest ratios are omitted. The work-to-rest ratios are the responsibility of the employer and is the key extrinsic risk factor for exertional heat stroke.

3. Page 29: Heat stress recognition and prevention training symptoms of heat stroke and treating heat stroke

Note: "Dry, hot skin with no sweating." This is very bad advice that has left the medical literature for at least 10 years. Nearly all cases of exertional heat stroke are still sweating at the time of collapse. Additionally- the treating heat stroke advice is antiquated. If appropriate medical staff is on-site than whole body cold-water immersion should be utilized to immediately and aggressively cool the patient. If medical staff is not on-site then immediate transport to a medical facility is warranted and the best cooling should be implemented while waiting for transport (i.e. rotate ice/wet towels, douse with cold water, etc.). Mr. Whitt's care was woefully inadequate and this is discussed below.

B) Quality Safety Meeting Process Heat stress Prevention (Course Code QS97- April 2011)

1. Page 8: "Monitor the actual heat index during the day and make adjustments in the work procedures as necessary"

2. Page 8: "Take at least a five-minute break every hour" (when high heat procedures must be implemented- Appendix C)

Note: This is, by far, the most egregious recommendation that Union Pacific created for the track workers they employed. Given the items listed in Consideration #2 above and the items that were commonly present in Consideration #3 above, a five-minute break per hour for a steel gang employee who is subjected to the brutal microenvironment of his craft is nonsensical. At absolute minimum, 5-10 minutes per half-hour and 20 minutes minimum per hour would be appropriate. The recommendations should be on a sliding scale where type of activity and environmental conditions are factored into the equation. The continued use of heat index is an outdated strategy. WBGT should be utilized because then you do not have to add some arbitrary figure to the heat index on sunny days. Additionally, Union Pacific itself admits that on sunny days the track temperature could be 15 to 30°F hotter than the ambient conditions, which would greatly amplify the microenvironment. The current recommendation for work-to-rest ratio by Union Pacific is absolutely inappropriate and tremendously unsafe. I have attached an example of an appropriate sliding scale WBGT work-rest-ratio that is determined by intensity of exercise and the environmental conditions used by U.S. Army). This is the kind of workplace safety standards that should be in place to protect the Union Pacific employees. As an FYI- a work-to-rest plan needs to be in place even when not in "high heat procedures".

2. Page 11-Appendix C- Buddy system

Note: This policy was not properly implemented, as it should have been, given the high heat conditions. Jared was left to suffer for an extended period of time with no assistance from co-workers.

C) Federal Railroad Administration- 49 C.F.R. 225.33 Internal Control Plans.

1. Point 1: "...harassment or intimidation of any person that is calculated to discourage or prevent such person from receiving proper medical treatment or from reporting such accident, injury, or illness will not be permitted or tolerated and will result in some stated disciplinary action against any employee, supervisor, manager, or officer of the railroad committing such harassment or intimidation"

Note: Given this whole case would have probably never existed if Jared's co-worker (David Birt) was allowed to proceed with the care he deemed appropriate for Jared this is a very important violation of a federal standard. The supervisor who found Jared deemed his conditions to be so bad as to determine immediate treatment to the nearest hospital.

Another individual- Mr. Talmadge Dalebout (a supervisor of Mr. Birt), who was not present, overruled the decision of the supervisor who was caring for Jared. Given that Mr. Whitt was suffering an exertional heat stroke the only opinion that mattered was that of the individual who was on-site caring for him. Exertional heat stroke victims are in no position to self-assess medical status, and their opinion should NEVER be heeded as rationale or relevant. This error in supervision and blatant violation of FRA policy caused Jared to suffer hyperthermia for a longer period of time than was necessary and was the likely cause of the ongoing medical issues he is now suffering. The severe muscle contractions noted in this case immediately following the onset of exertional heat stroke could have been relieved with immediate cooling and pharmaceutical intervention.

D) Federal Railroad Safety Act 49 U.S.C. 20109. Employee Protections.

1. "(c) prompt medical attention, (1) prohibition a railroad carrier or person covered under this section may not deny, delay, or interfere with the medical or first aid treatment of an employee who is injured during the course of employment."

Note: A violation of this statute occurred. See note in section C above.

E) GCOR- General code of operating rules, fifth edition, 2005.

1. 1.2.1 care for injured- "when passengers or employees are injured, do everything reasonable to care for them".

Note- This rule was not complied with. The most reasonable thing that should have possible been done in this case- a quick transport to a hospital of a heat stroke victim (since no medical staff were on-site) was thwarted by a supervisor.

F) Union Pacific Building America Maintenance-of-Ways Rules Effective Nov. 17, 2008

1. Statement of safety policy- "Management and employees at all levels are responsible for maintaining safe working conditions and preventing personal injuries"

Note: Given the lack of effort to implement simple, commonly accepted standards to prevent and/or recognize and/or treat exertional heat stroke, this policy was complied with.

Consideration #5:

1. Why was medical assistance not immediately implemented (on-site aggressive cooling, cooling during transport, immediate transport to a hospital). If it had, then likely all issues related to this case would have been prevented. When an individual is suffering an exertional heat stroke they can not accurately report/portray/describe their own condition. They are often confused and disoriented. The supervisor needs to assist at a time like this. I have never seen a case like this in which a person who was not present overruled a colleague regarding the proper course of care for a heat stroke victim. The egregious action caused an irreversible delay in proper care. Exertional heat stroke care is dictated by immediate recondition of the condition and aggressive whole-body cooling. Jared did not receive appropriate care in this circumstance, but the worst part is he was specifically prevented from receiving care by his supervisor.

2. Make changes due to the high heat range being experienced. It is clearly stated that heat illnesses are likely in these conditions. To my knowledge, an inadequate effort was made to provide this information to the employees.

3. Inadequate efforts were made by UP to assist the employees with the following: a) make modifications to work-to-rest ratios based on the environmental conditions and the work to be performed, b) plan work to get heaviest work done before noon, and c) adjust work hours.

4. Given the very likelihood of heat/hydration problems the amount of time spent on education and training for supervisors and employees was inadequate, as evidenced by the lack of proper response by the UP supervisors and the limited knowledge of the employees.

5. The long-term complications that Jared Whitt has suffered, while not surprising following a heat stroke that is not cared for properly during the acute stages, may also place him at a greater risk for future issues with heat intolerance. They also have caused difficulties with activities of daily living. Given that his occupation requires intense effort in hot conditions, it is extremely unfortunate he is suffering from complications from the heat illness.

Consideration #6

Given that Mr. Whitt suffered a serious heat illness it is imperative that it be determined if Mr. Whitt has a predisposition to exercise heat intolerance or if any negative thermoregulatory consequences remain from original insult. I recommend the following plan for his return to work strategy:

- 1) Mr. Whitt should undergo an exercise heat tolerance test prior to gaining heat acclimatization. If he performs satisfactorily he should proceed to point 3. If not, he should-
- 2) Mr. Whitt should follow a structured and medically supervised heat acclimatization program for 1-month and then undergo a follow-up exercise heat

tolerance test. If this performs satisfactorily he should proceed to point 3. If not, he and Union Pacific should consider alternative employment.

- 3) When Mr. Whitt returns to his work duties at Union Pacific the following precautions need to be addressed to maximize the likelihood that the transition will be smooth and without incident:

- a. Heat acclimatization
- b. Hydration
- c. Work to rest ratios
- d. WBGT
- e. Body cooling
- f. Medical supervision
- g. Education

Details of points a-g can be provided if and when it becomes appropriate to provide details on the implementation of this process. The current heat recommendations of the Union Pacific guidelines are insufficient, and at times, inaccurate.

Consideration #7

In conclusion, the evidence in this case clearly shows that the Union Pacific heat stress protection program was seriously inadequate for the steel gang workers that they employed. This is disappointing and surprising given the outstanding information related to this topic that is currently available. Utilization of this knowledge was absolutely necessary (and still is to this day) to enhance the health and safety (and performance) of the employees of Union Pacific. The employer had (and have) the responsibility to have an appropriate plan in place regarding the prevention, recognition, and treatment of exertional heat illnesses. The deviations set forth were below the standard of care regarding the planning and implementation of an appropriate health/safety standards for a work setting of this type, and contributed to cause the medical issues experienced by Jared Whitt on June 28, 2012 and the resulting sequelae of medical signs and symptoms that have emanated from said condition.

Prior Experience as an Expert:

I have served in some capacity on over 30 different legal cases regarding the influence of heat exposure on the human body and/or sudden death in sport/physical activity. This level of service has varied from case to case. Many cases have been settled prior to the need for deposition/testimony to be provided (consulting services only).

Cases in which I have provided a deposition/trial testimony or an official report or current case in which it is likely:

1) Eraste Autin- college football player in Florida who died in 2001 (attorney for plaintiff- Virginia Buchanan)- Deposition 2006. Civil case settled 2007.

2) Armando Valdes III v multiple parties including McNeil PPC (part of J & J, makers of Tylenol Cold and Flu-contained pseudoephedrine). Assisted defense lawyer for the drug company in this case of an exertional heat stroke that occurred in a roller hockey player

in Miami in 2002 (case filed in 2003 in the 11th Judicial Court in Dade County Florida). Assisted lawyers for the defense- Barry Davis and Michael Bon from Thornton, Davis, and Fein. McNeil PPC dropped from the lawsuit at later date.

3) Bobby Stephens and Jamell Johnson (2 separate cases involving complaints against Tampa Bay Youth Football League)- youth football players in Florida who died in 2006 (attorney for plaintiff's- Christopher Ligori)- Deposition 2008 in Bobby Stephens case,

A) Stephens civil case settled in 2009

B) Johnson civil case settled in 2010.

4) Max Gilpin- Witness for the prosecution- Testified in Louisville in the trial of The State of Kentucky vs. David Stinson.

A) Criminal case- reckless homicide charge against a high school football coach for his role in the heat stroke death of football player. September 10, 2009. I testified for the state of Kentucky. Jury ruled in favor of coach, September 2009.

B) Civil Case- deposition, March 2010. Millicent Tanner lawyer for the plaintiff in civil case. Civil case settled April 2010.

5) Two Federal lawsuits involving Korey Stringer Case, NFL football player for the Minnesota Vikings who died August 1, 2001 (Paul DiMarco attorney for plaintiff out of Cincinnati):

A) The Estate of Korey Stringer vs. NFL- 2008, settled 2009

B) The Estate of Korey Stringer vs. Riddell, Inc.- 2008, settled 2011

6) Clifford Melton versus the Department of Energy- 2009, provided official report and deposition. (Attorney's for plaintiff's Amalia S. Lucero and Lisa K. Vigil out of New Mexico). Civil case settled 2010.

7) Roger Woodfin vs. CSX- Train welder who suffered heat stroke (occurred in Alabama, attorney for plaintiff in Houston Andre C. deLaunay). Official report only (October 2009). Civil case settled 2011.

8) Trumain Moorer vs. Norfolk Southern Railroad Company- Railroad conductor who suffered heat illness. Deposition Feb 2010. (John Moss Lawyer for the plaintiff, out of Atlanta). Civil case settled 2010.

9) T.J. Strader vs. Calavitta Camps, Inc. Wrestler who suffered an exertional heat stroke during a wrestling camp in Montana. Official report, May 2010. Theodore Dunn, lawyer for the plaintiff. Civil case settled 2010.

10) The family of Ereck Plancher vs. University of Central Florida. On June 30th, 2011 jury ruled in favor (and awarded 10 million dollars) of family saying that UCF was negligent. The case involved an athlete who died from exertional sickling. (Lawyer's for plaintiff's- J.D. Dowell and Steven Yerrid, out of Tampa). Deposition January 2011. Trial testimony June 17 & 20, 2011.

- 11) Assisted Constangy, Brooks, and Smith, LLC. in a workman's comp case that was investigating the possible presence of an exertional heat stroke (assisted the defense-lawyer Marion Handley Martin). Opinion provided April 2011. Civil case settled 2011.
- 12) John Gaston v LaGrange College and Kevin Howard, Exertional heat stroke civil case, Lawyer- Jason Crawford out of Columbus, Georgia. Deposition- January 25, 2012. Civil case settled 2012.
- 13) Estate of Ja'Quayvin Smalls v Western Carolina University, Exertional sickling civil case, college football, Lawyer for plaintiff- John Chilson out of North Carolina, Deposition- February 28, 2012. Civil case settled 2012.
- 14) Two cases involving Grambling University.
 - A) Estate of Henry L. White III v Grambling University, Exertional heat stroke civil case, college basketball player died in 2009, Lawyer for plaintiff- Scott Chafin out of Louisiana, Deposition- March 2012. Trial testimony January 30, 2013. Jury ruled in favor of family February 2013 and awarded 3 million dollars.
 - B) Jacoby Lee v. Grambling University, another heat illness tat stemmed from the same episode that killed Henry White.
- 15) Estate of Bennie Abrams v University of Mississippi. Exertional sickling civil case, Lawyer- Bernie Egdorf out of Mississippi. Civil case settled 2013.
- 16) Estate of Edwin Miller v. Shady Grove Adventist Hospital. Edwin Miller, a high school football player died following a practice in July 2009. Lawyer for plaintiff- John FX. Costello out of Maryland.
- 17) Estate of Joe Ciancola v. University of Rhode Island. Joe, a college baseball player, died from exertional heat stroke following a conditioning session in October 2011. Lawyer for plaintiff- Patrick Barry out of Rhode Island.
- 18) Estate of DJ Searcy v. Georgia high school and coaches. DJ, a high school football player from Georgia died from exertional heat stroke in August 2011 while participating in a football practice.
- 19) Stefan Woodson v. City of Richmond. Stefan suffered an exertional heat stroke in July 2012 while he was a prisoner in the Richmond jail system. Lawyer for plaintiff Seth Carroll out of Virginia.
- 20) The current case.

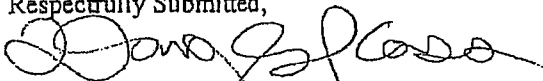
Approximately 6 other cases are just beginning.

Consulting Fee

I am providing consulting services for your law firm for the rate of \$400/hour plus expenses for all time committed to this case (including all travel time). As of November 30, 2013, I have committed approximately 25 hours to this endeavor.

I hold the opinions I have expressed to be accurate to a reasonable degree of medical and scientific probability as an expert in my field. I reserve the right to supplement this report as necessary when additional information is available.

Respectfully Submitted,



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